FEDERAL AVIATION ADMINISTRATION
NATIONAL AIRSPACE SYSTEM
OPERATIONAL EVOLUTION PLAN
2004 - 2014

EXECUTIVE SUMMARY

January 2004
Version 6.0

U.S. Department
of Transportation
**Federal Aviation
Administration**

Office of the Administrator

800 Independence Ave., S.W.
Washington DC 20591

January 2004

Dear Members of the Aviation Community:

This latest version of the Operational Evolution Plan is yet another step by the FAA to ensure that we're delivering value to the taxpayer. Supporting the FAA's new strategic Flight Plan and the new Air Traffic Organization, Version 6.0 continues our commitment to increase capacity as we modernize aviation in the coming decades. What we've done, simply, is to put measurable goals in place while integrating all of the FAA's efforts to improve the system. For our goal of "Greater Capacity", the OEP Version 6.0 brings it all together.

The OEP is a vibrant and critical part of our new Air Traffic Organization. It serves as a model for how an organization can examine its mission and customer needs and view each through the lens of economic viability. Through the OEP, we're making sure that our investments are both affordable and the best way to spend taxpayer money.

The OEP's success requires investment by the Federal Government, the airport authorities, and the air space users. The FAA's budget is designed to support the OEP initiatives in concert with the NAS Architecture – the comprehensive plan for modernization. Despite aviation economic realities, the FAA is fulfilling our investment commitments. By achieving and maintaining consensus with our customers, we refocus investment as needed to improve aviation services. This customer focused process is as much an OEP success as the capacity enhancements that we have achieved.

This coming year, our budget constraints are greater than anticipated. The OEP process together with an agency-wide financial assessment will determine how we commit to future capacity growth enhancements. We will need your help to achieve our Flight Plan goals and best serve the needs of the aviation community and the flying public.

We can claim many successes since our last report. We opened runways in Cleveland, Miami, Denver, Houston, and Orlando. The User Request Evaluation Tool software was put into a seventh location, which will afford the airlines savings of $1.0 million to $1.5 million per month. The Integrated Terminal Weather System is operational at four new locations (making a total of six locations), delivering critical information about fast-moving weather systems directly to controllers – faster than they've ever gotten it before. The Traffic Management Advisor is in place at Houston, further increasing capacity in one of this country's rapidly developing aviation hubs.

More new runways are on the way. We're also aiming to reduce vertical separation at very high altitudes resulting in thirteen available flight levels, an increase of nearly 50 percent. We project airline savings of almost $400 million in the first year alone as a result of using less fuel.

Under the umbrella of the FAA's Flight Plan, we're taking decisive steps to ensure America's global leadership of aviation. We remain fully committed to increasing safety, creating greater capacity, bolstering our international leadership, and furthering organizational excellence. OEP Version 6.0 is one of the tools that will help us get there.

Marion C. Blakey
Administrator

INTRODUCTION

This is the executive summary of Version 6.0 of the National Airspace System (NAS) Operational Evolution Plan (OEP). The full plan, which includes solution sets, timelines, and the Federal Aviation Administration (FAA) executives accountable for delivery of the related programs, is available on the Web at *www.faa.gov/programs/oep*. It is a living document, occasionally updated, with changes presented in the Web version.

The OEP is an ongoing ten-year plan developed by the FAA to increase the capacity and efficiency of the NAS, while at the same time enhancing safety and security. The plan specifically addresses air transportation services delivered to our customers. It reflects collaboration with the aviation community, including the airlines, cargo carriers, general aviation, airports, manufacturers, the Department of Defense (DoD), the National Weather Service, and the National Aeronautics and Space Administration (NASA).

To move from consensus on objectives to credible and actionable plans, the OEP integrates and aligns infrastructure and operational procedures with FAA customers' needs, capabilities, and plans. Commitments and investments across the aviation community are reflected in the plan, along with the status of operational evolution, such as accomplishments, expected benefits, and future plans. The solution sets in the plan are organized in the following core areas or quadrants: Arrival/Departure Rates, En Route Congestion, Airport Weather Conditions, and En Route Severe Weather.

An FAA executive coordinates agency and industry efforts with support from cross-agency teams responsible for delivering outcomes and benefits. The RTCA, as the key aviation community facilitator, coordinates industry alignment and commitment to the OEP.

FAA Snapshot

The FAA operates and maintains the nation's complex air traffic control (ATC) system, including the facilities and equipment that enable its operation. We control and monitor more than half of the world's air traffic—up to 5,000 aircraft in U.S. airspace at any given moment. We conduct state-of-the art research to continually improve safety and efficiency. We help improve the safety and capacity of more than 5,000 public-use airports in the United States. Our inspectors oversee more than 7,000 operators, including 139 air carriers.

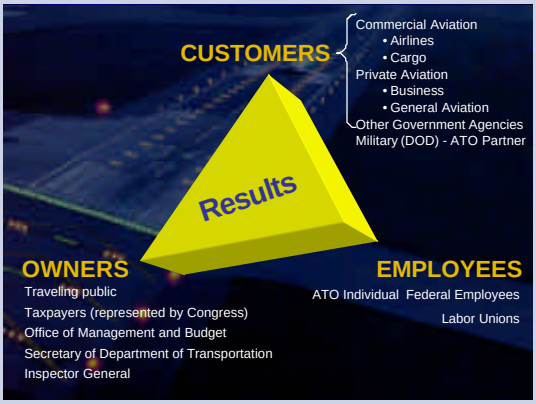
In all of these efforts, we recognize that capacity is the backbone for the aviation industry and for air travel. Aviation can grow and remain healthy only if capacity grows. As we increase capacity, we will make sure it is done in a safe and environmentally sound manner. Safety is not only a top public-interest priority; it is an economic necessity. People will fly only if they feel secure and trust the system.

Recognizing the growing demands on the NAS and the agency's own shortfalls in the past, the FAA has resolved to show greater fiscal

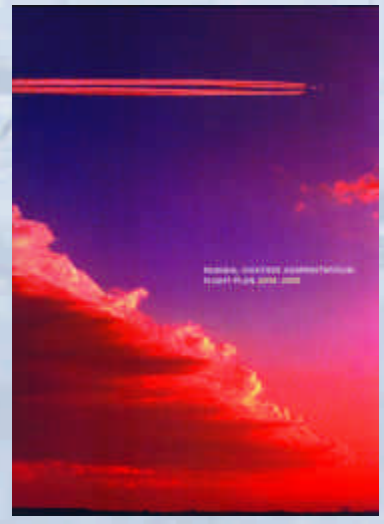
"Air transportation services delivered to our customers"

Ongoing ten-year plan to increase capacity and efficiency. . .the congestion reduction agreements and commitments of the aviation community

Capacity is the backbone for the aviation industry and for air travel



Common set of goals and consistent strategy that reflects the needs of our customers, supported by our owners and fulfilled by our employees



responsibility and more cooperation with our aviation community partners. To meet these objectives, the agency recently introduced the Air Traffic Organization (ATO). The ATO will have two key characteristics in addressing FAA goals: strong leadership with performance-based management and a strong focus on our customers, the users of the nation's airspace. Those customers include passenger and cargo airlines; business and general aviation; and the military, which is both a customer and an important partner.

To improve our focus, the various business plans across the agency will be consolidated and managed by the Air Traffic Organization. Details of that consolidation are expected to be available in the summer of 2004. A single plan is being designed to support specific objectives with clearly identified metrics for each fiscal year. These metrics will provide a way to measure if, in fact, the FAA is delivering results. We want to be held accountable publicly for our results.

To fulfill our mission, the FAA must be a world-class organization. With a clear focus on our customers, the right tools and training, and support from the agency's owners, our employees will bring these plans to life.

In creating the ATO, we have integrated the activities of three previously segmented FAA organizations - Air Traffic Services, Research and Acquisition, and the Free Flight Program Office. In the process we have created a new organization that is centered on a clearly defined mission and a common set of goals and a consistent strategy that reflects the needs of our customers, and which is supported by our owners and fulfilled by our employees.

Those goals and strategies are addressed in three documents: the FAA Flight Plan, which charts the FAA's overall goals and strategic initiatives to 2008; the OEP, which focuses on near- and mid-term systems and procedures over a rolling ten-year period; and the National Air Trans-portation Plan, which is being developed by the Joint Planning and Development Office (JPDO). The JPDO is developing a national roadmap in collaboration with NASA, DoD, the Department of Commerce, the Department of Homeland Security, and the Office of Science and Technology, which will see us through a transformation of the air transportation system by the year 2025.

The Flight Plan

The Flight Plan is the FAA's complete strategic business plan for all of the agency's activities and as such will be linked to the FAA's budget requests through 2008. It will be used along with detailed business plans from all FAA organizations to align performance and ensure accountability at all levels of the agency. Progress will be measured by comparisons with performance measures in the plan. It is highly data driven with specific benchmarks to assess progress. Its measures may evolve over time as we work with our employees and external stakeholders to develop new ways to measure our actions. Our Web site, www.faa.gov, contains detailed explanations of the performance measures contained in the Flight Plan.

Coordinating Our Research Through the JPDO

To fulfill its mandate ("coordinating goals and priorities and coordinating research activities within the Federal Government with United States aviation and aeronautical firms") the JPDO will have a continuous dialogue about research plans with each of the member agencies. To set a common foundation for planning, we will conduct a baseline activity. In developing the national plan, the JPDO will develop the 2025 target and capture the major intermediate steps and priorities that represent the coordinated decisions of the member agencies.

While these decisions will be in broad four- to five-year windows, it will be the individual agencies that will prioritize the specific projects and programs needed to carry out their individual portions of the national plan.

To facilitate the transfer of research from one agency to another, or technology transfer to private industry, the JPDO will work with each of the agencies' procurement/program areas to determine the best course for each major development. These schedules and approaches will be jointly discussed, and then executed by the individual agencies. Progress on goals and commitments by the member agencies will be addressed in annual reports.

Affordability

The temporary downturn in air travel is not a time to delay investment. Instead, it affords us an opportunity to focus on increasing airport and NAS-wide capacity as well as the ability of our customers to maximize safe and efficient access to the system.

The FAA has set a high bar for safety and efficiency, and we have an enormous challenge ahead of us. Since the mid-1990s we've been concentrating on building a system that can accommodate growing demand. But those years of unprecedented growth hid a no less important challenge: How can we define a modernization path that we can all afford?

With Aviation Trust Fund revenues projected to be relatively smaller in the coming years, the FAA will have considerably less funding available to finance the introduction of new capabilities into its operations budget. Likewise, most of our customers must scrutinize their own investments in upgrading their fleets in these difficult economic times. So the crucial question is: "How can the FAA address both capacity and affordability at the same time?"

There are two parts to the answer. First, the ATO, which is designed to emphasize performance with integrity, honesty and transparency, will help the FAA prioritize programs and projects based on capacity gains and cost efficiencies. Second, in concert with stakeholders and owners, the FAA must discontinue low-priority programs.

The JPDO will create an integrated plan for a Next Generation Air Transportation System

"The JPDO will provide an agreed-upon framework for industry investment and innovation"

Performance with integrity, honesty, transparency. . .

Demand is returning, but it is both the same and different than before

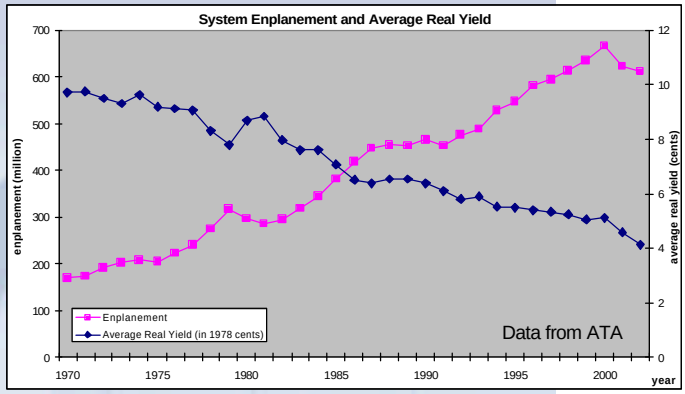
Industry Snapshot

Aviation demand has been significantly affected by a number of events over the past several years. As a result, total activity across the NAS, i.e., landings, arrivals, and en route handover counts, are still about 4 percent below 2000 levels,[1] while passenger activity is 15 percent lower than the 2000 peak.[2] However, these aggregate totals do not reflect other developments of interest in the aviation industry.

Although a number of traditional hub airlines have entered bankruptcy and/or become smaller, low-fare carriers continue to grow and now account for 23 percent of domestic passenger activity.[3] The regional jet market is also expanding as carriers transfer more routes to their regional airline partners. Consequently, the regional partners have increased their share of passengers from 5.5 percent in 2000 to more than 7 percent currently.[4]

These trends have affected airport activity in diverse ways. Distinct demand increases are evident. September 2003 weekday operations have exceeded September 2000 weekday levels at a number of airports, including Las Vegas, Salt Lake City, Chicago Midway, Cincinnati, and Atlanta. In contrast, flight operations are down at a number of other airports.

These are recent changes, however, that do not influence larger trends in air transportation. Over a 25-year timeframe, these recent developments are seen as part of relatively stable, long-term trends in air transportation. Given that these trends are expected to continue, the need for the OEP remains a compelling priority for sustaining our economic growth.



The global trend of airline deregulation and privatization, combined with technological improvements, has increased airline productivity. Combining this with the success of low-fare airlines, we have seen average fares decrease and the number of passengers per year worldwide increase. Between 1978 and 1998, real fares in the United States declined over 30 percent in domestic markets and 43 percent in international markets. Over the same time period, there was a 35 percent increase in air carrier operations.[5] The same effects are seen in the enplanement and yield data (see figure). These effects were not concentrated in the years immediately following deregulation. Average fares,

[1] Analysis is based on data from OPSNET ARTCC data [October 2003], <http://www.apo.data.faa.gov/>

[2] Based on data from Air Transport Association (ATA), 2003, <http://www.airlines.org/econ/d.aspx?nid=1032>

[3] Based on (2003) data from the U.S. Department of Transportation's Origin and Destination, and Form 41 data, <http://www.transtats.bts.gov/Databases.asp?Mode_ID=1&Mode_Desc=Aviation&Subject_ID2=0>. Also from Airline Monitor <http://www.airlinemonitor.com> data for October (2003), reported in weekly SpeedNews briefs, <http://www.speednews.com>.

[4] See footnote 3 above.

[5] Federal Aviation Administration, *Twenty Years of Deregulation: 1978-1998*, pp. 3-4, www.faa.gov.

adjusted for inflation, continued to decline through the 1990s.[6] Similar effects are observed with deregulation in other regions. As fares fall, passenger demand increases.

The partial deregulation of international operations has also reduced fares and generated more passengers. Our Department of Transportation (DOT) reports that the Open Skies agreements and airline alliances nearly doubled the rate of growth of transatlantic passenger traffic from the early to the late 1990s, with an increase in the number of international origin-destination pairs served and a 14 percent reduction in fares between 1996 and 1998. The competitive pressures of the alliances even caused fare reductions on service between the United States and four European countries (Great Britain, Spain, Greece, and Ireland) that still operate on more restrictive bilateral air service agreements with the United States.[7] In the future, common aviation markets, in place of the restrictive bilateral treaty systems, will likely further increase competition, airline productivity, and passenger numbers.

Within the context of these long-term trends—increasing productivity, declining fares, and increasing numbers of passengers and flights—recent temporal declines are less significant to the continued growth of air transportation. In fact, most of these developments reinforce the positive airline productivity and fare reduction trends. For example, the aggregate losses exceeding more than $23 billion since 2001 for traditional hub carriers,[8] combined with the continuing competitive pressure from low-fare airlines, ensures that reducing costs, increasing productivity, and lowering fares will continue to be significant trends into the future. Again, lower fares mean more passenger demand. Even the dramatic increases in security costs to the NAS, and the efforts to make security more efficient, are not expected to change the long-term trends.

Responding to the effects of these long-term trends is the focus of the OEP and the associated RTCA processes. Airlines, passengers, cargo carriers, and general aviation will continue to strain against limited airport and Air Traffic Management (ATM) infrastructure for the foreseeable future. The FAA, the airport authorities, local governments, researchers, suppliers, the DOD, and other members of the aviation community, will continue their efforts to jointly improve the capacity and the performance of the air transportation system.

. . .as costs and fares fall, more and more demand will appear, temporary setbacks not withstanding.

[6] "Adjusted for inflation, average fares decreased 25 percent from 1990 to 1998." Transportation Research Board, 1999, *Entry and Competition in the U.S. Airline Industry,* Special Report 255, National Research Council, National Academy Press, p.19.

[7] Office of the Secretary, U.S. Department of Transportation, 2000, *Transatlantic Deregulation: The Alliance Network Effect,* International Aviation Developments, Second Report, and Yergin, Daniel, Richard H.K. Vietor and Peter C. Evans, 2002, *Fettered Flight: Globalization and the Airline Industry,* Cambridge Energy Research Associates, p. 33, figure 8.

[8] See footnote 2 above.

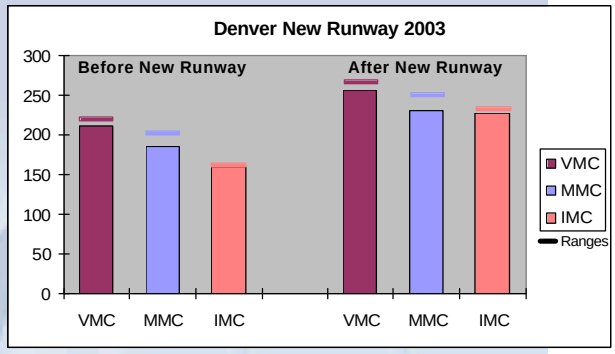
REPORT CARD OF THE OEP

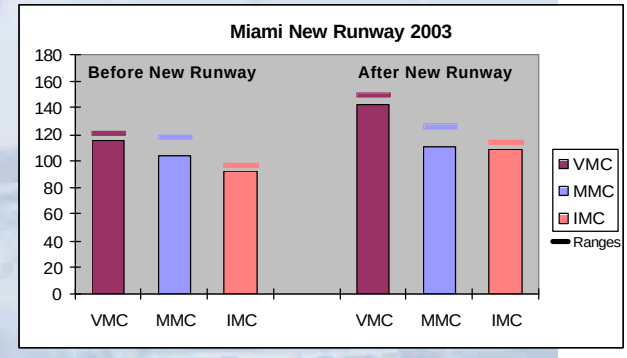
Overview of 2003 OEP Performance Results

At the end of Fiscal Year 2003, two additional runways were commissioned: Denver (DEN) and Miami (MIA). These runways are expected to provide the following increases in capacity:

Airport	VMC Capacity	MMC Capacity	IMC Capacity
DEN: Old Capacity	210-219	186-202	159-162
DEN: With New Runway	256-266 (+21%)	230-249 (+23%)	227-231 (+42%)
MIA: Old Capacity	116-121	104-118	92-96
MIA: With New Runway	142-149 (+22-23%)	111-126 (+6%)	10 (+18%)

Significant system changes realized this year





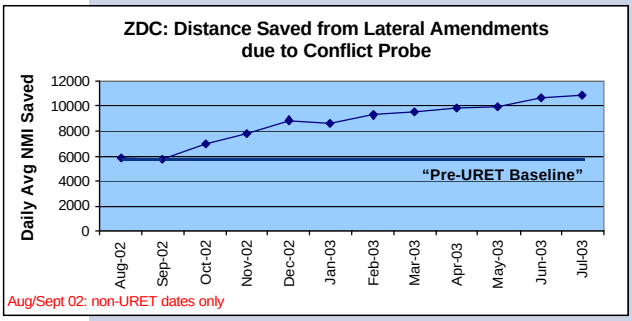
In Denver, the runway is expected to increase the departure capacity during Visual Meteorological Conditions (VMC) and Marginal Meteorological Conditions (MMC), and to increase both the arrival and departure capacity during Instrument Meteorological Conditions (IMC). Overall, a 20 to 40 percent gain in capacity is anticipated with this runway. In Miami, the new runway is expected to increase the arrival and departure capacity in all conditions, with increases in capacity between 6 and 22 percent, depending on weather conditions.

In addition, a short runway in Cleveland became operational and provided increased capacity throughout 2003. As planned, this runway will be lengthened and achieve its full capability in 2005.

Traffic Management Advisor (TMA) became operational at Houston. Locations that use TMA continue to show a 3 to 5 percent throughput benefit. With the most recent addition of Los Angeles Center, Time Based Metering is now in operation at four centers. The scheduling accuracy of TMA was enhanced via the Adjacent Center Data Feed modification. This feature extends the stability of traffic flow that in turn delivers fuel savings and greater arrival time predictability.

Integrated Terminal Weather System (ITWS) is operational at four new locations and is providing improved weather products to ATC facilities. ITWS minimizes traffic flow disruption from fast moving weather by optimizing safe aircraft routes that avoid the storm. New locations this fiscal year are Kansas City, Miami, Houston, and St. Louis.

An additional User Request Evaluation Tool (URET) conflict probe became operational at Jacksonville Center. Recent measurements at Washington Center show that URET is saving 4,000NM per day in direct routings at Washington, which translates into $1,000,000 in efficiency savings per month for FAA customers.



$1,000,000 in efficiency savings per month for FAA customers

Anchorage En Route Center's oceanic airspace was reconfigured by adding a new sector. The rearranged airspace will balance workload and improve efficiency.

Three elements of High Altitude Redesign initial implementation were completed. Waypoints around Special Use Airspace (SUA) and a SUA information Web site were implemented in mid-2003. Q-routes for Global Positioning System (GPS)-equipped aircraft are available along the west coast and to Canadian re-routes. Non-restrictive routing in the seven northwest centers was turned on in September 2003.

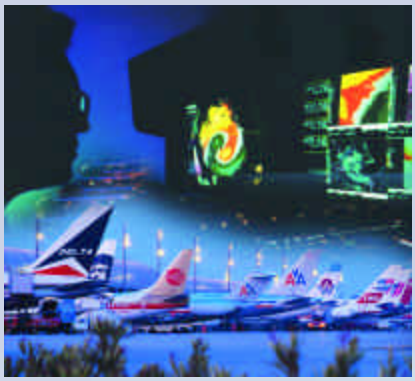
At the Air Traffic Control System Command Center, Slot Credit Substitution was implemented. New procedures for using Flow Constrained Areas (FCA) and Flow Evaluation Areas (FEA) were also implemented. Improvements to the Collaborative Convective Forecast Products (CCFP) were also realized. In addition, the convective forecast was made available to the Collaborative Decision Making (CDM) community on the Enhanced Traffic Management System (ETMS) and other CDM upgrades were also implemented. Using new software, flight lists per Playbook play were generated.

Significant system changes realized since OEP conception

With the commissioning of the Wide Area Augmentation System (WAAS) in July of 2003, the use of new vertical guidance instrument approach procedures became available. These LPV approaches enable more aircraft to safely land at smaller airports, thereby allowing potential "off-loading" of this traffic from a major hub airport. The first seven LPV approaches have been published for the following airports: Wittman Regional, Wisconsin; McNary Field, Oregon; Leesburg Executive, Virginia; Montgomery Co. Airpark, Maryland; Fredrick, Maryland; Harry P. Davis Field, Virginia; and Will Rogers World, Oklahoma. WAAS will enable approaches with vertical guidance to several thousand runway ends; procedures for more approaches are being worked.

Standard Instrument Approach Procedures (SIAPs) for 553 runway ends were published this year throughout the United States.

While the OEP normally focuses on completing changes in system capacity, rather than steps along the way, it is important to note that the FAA Roadmap for Performance Based Navigation was published this year as a joint FAA/industry effort; it lays out the plan for proceeding with Required Navigation Performance (RNP) and area navigation (RNAV) system capabilities. This is a first step toward further utilization of capabilities already on aircraft and achieving additional significant congestion reductions.



State of the Evolution

To date, the aviation community has realized the following operational improvements set forth in the OEP:

- ***Increased arrival and departure rates***
  - New runways have been commissioned at the Phoenix, Detroit, Denver, Miami, and Cleveland (short runway) airports
  - All choke point actions are complete
  - The TMA is operational at eight centers; Time Based Metering is in use at four centers
  - Over three dozen new and overlay RNAV routes have been implemented
  - The Administrator's Policy on RNP has been published
  - Las Vegas implemented the four corner post airspace redesign

- ***Improved flight during unfavorable airport weather conditions***
  - Precision Runway Monitor was installed at Minneapolis-St. Paul and Philadelphia airports
  - The first five production units of the ITWS are in use
  - Runway Visual Range data are now provided to users via Collaborative Decision Making Network and available to more than 49 airports
  - The first seven WAAS-enabled LPV approaches published
  - 553 Standard Instrument Approach Procedures published

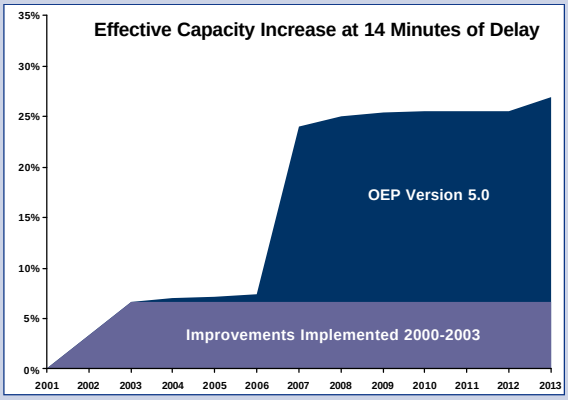
- ***Decreased en route congestion***
  - All choke point actions are complete
  - The URET conflict probe is now operational in seven centers
  - The Controller Pilot Data Link Communications (CPDLC)-Build 1 tool is in use at Miami Center
  - There are more Web-based collaborative tools and better quality data for managing congestion
  - Gulf of Mexico RNAV routes have been implemented
  - The Anchorage Ocean airspace was redesigned
  - High Altitude Phase 1 initial implementation began

- ***Improved flight during severe en route weather conditions***
  - Ground delay programs are being executed with improved compliance
  - The Collaborative Convective Forecast Product extended range forecast of thunderstorms is available on the Command Center Web site
  - The Playbook has been expanded to 119 plans to provide more options
  - Weather radar data are now available on en route controllers' displays
  - The FEA/FCA Collaborative Routing Coordination Tools prototype functions have been implemented on the ETMS and further upgraded
  - Virginia Capes agreement was reached on use of east coast warning area airspace for hazardous weather avoidance

Each of these initiatives increased the capacity and efficiency of the NAS and provides direct benefit to NAS users. Many represent the initial installment of a longer-term plan or waterfall.

Overall Capacity Results and Expectations

The OEP Capacity Growth Chart depicts the amount of "Effective Capacity" provided by the NAS, based on the cumulative modeled capacity gains from OEP solutions. Effective Capacity is defined as the amount of traffic that may be handled at a fixed level of delay. The fixed level of delay selected for the purposes of the OEP Capacity Growth Chart is 14 minutes per flight, based on the average that existed when the OEP started. During the past year the OEP modeling effort has undergone a significant upgrade, therefore results for OEP Version 5.0 are just recently available.



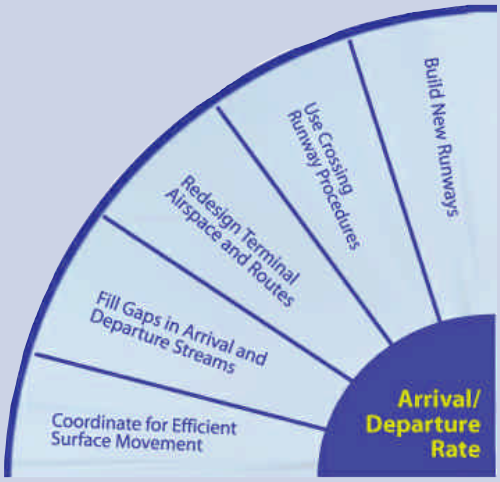
Effective capacity is up by 6.5% since OEP inception due to joint FAA, local community and industry actions

The OEP capacity projection for Version 5.0 of the OEP changed in several ways from the previous projection. Our current analyses imply that in Fiscal Year 2003 the NAS had grown by approximately 6.5 percent in terms of Effective Capacity when compared to Fiscal Year 2000. This level is higher than the anticipated growth of approximately 3 percent previously estimated for Fiscal Year 2003. The reason for this larger-than-expected growth in Effective Capacity is currently being studied. Since the OEP Version 4.0 analysis was completed, some important changes have occurred to the NAS: the changing allocation of traffic to different city pairs; airline schedule depeaking at several locations; and the operational improvements provided by the OEP.

In addition, many differences in the modeling approach and assumptions have been implemented. For example, four new airports (Cleveland, Fort Lauderdale, Midway, and Phoenix) were included in the analysis, which brings the total to 35. In addition, the influences of selected OEP enhancements were refined. Part of the update effort over this past year involved performing more detailed modeling of airport operations under additional weather conditions. As better information has been obtained from the various programs regarding how capacity may be influenced by changes in the system, we have incorporated it into the modeling effort. These factors all contribute to changes in our understanding of OEP capacity growth.

Despite financial impacts to both industry and FAA, OEP is projected to keep pace with forecasted demand into the future

Another way the Version 5.0 results differ from Version 4.0 is in the projection of Effective Capacity to 2013. Version 5.0 results show an approximate increase of Effective Capacity of 27 percent by 2013, while Version 4.0 results show an increase of approximately 30 percent by 2010. Again, this difference is the result of many factors, including refined approach and assumptions, as well as changes to the OEP itself. Because Effective Capacity is defined as the amount of traffic that may be handled at a fixed level of delay, any change in delay at the individual airports may have a positive (if delay decreases) or negative (if delay increases) influence on Effective Capacity. For example, Fort Lauderdale is a new airport to the OEP and it is expected to have significant delay; that fact alone will cause the mountain chart to get smaller. Over time the OEP Capacity Growth Chart will continue to be enhanced as the OEP evolves and as additional information becomes available.

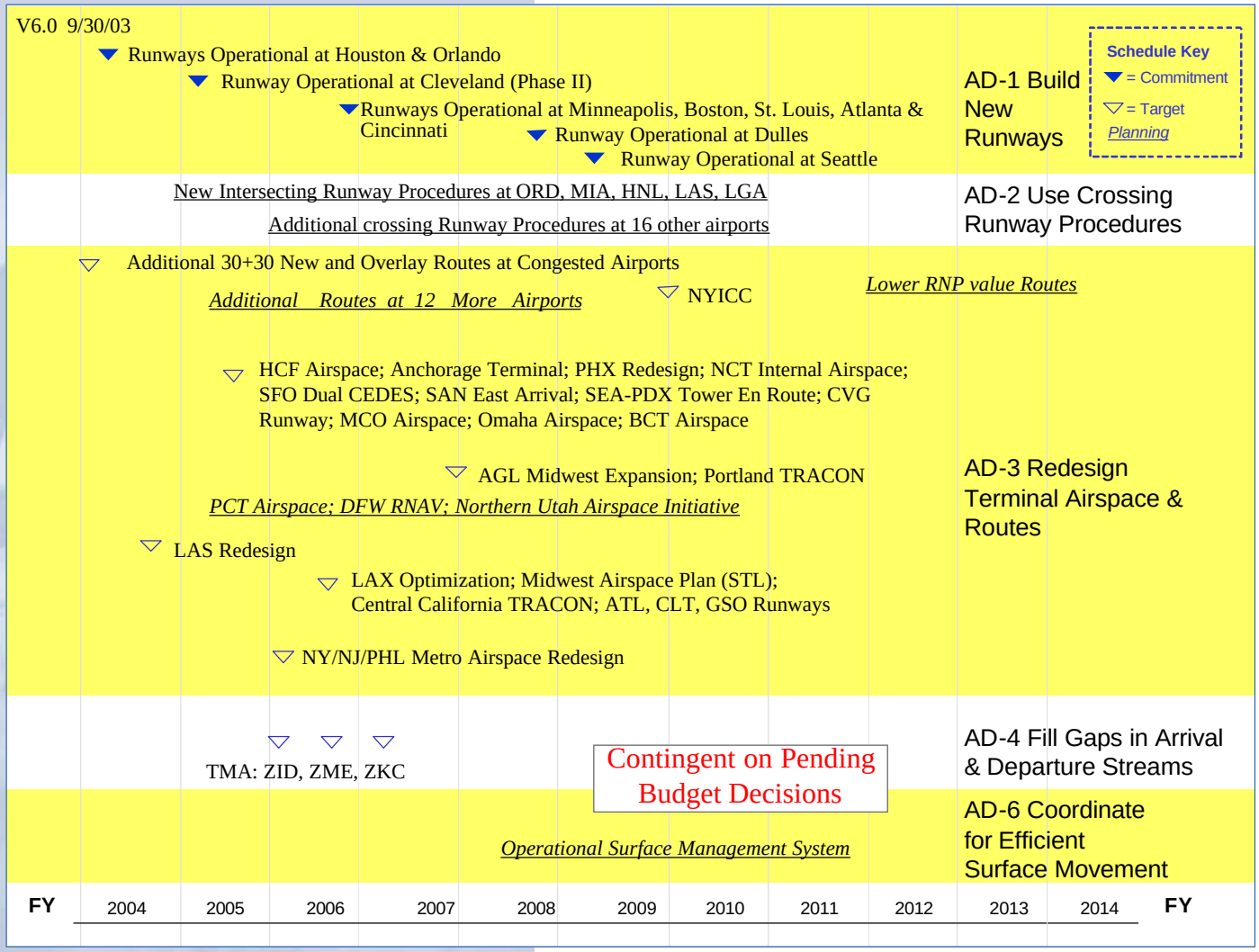


Overview of V6.0

Arrival/Departure Rates

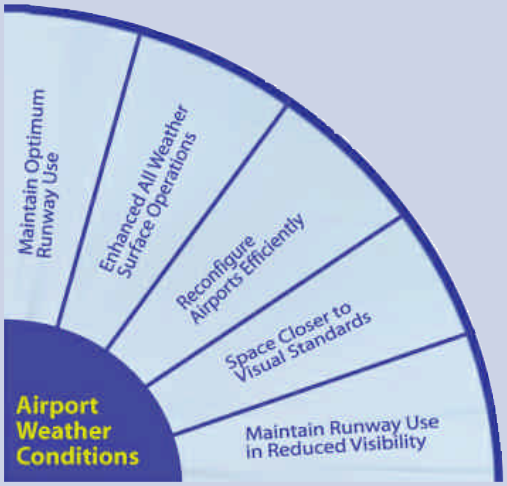
There are two main strategies to help airports meet peak demand: build new runways; and maximize the use of existing runways. A new runway can increase airport capacity and efficiency, but a runway can take ten years to plan, construct, and commission. Currently, the OEP includes ten runways planned at benchmark airports. A combination of air traffic procedures, new technologies, improved airspace design, surface management, and decision support tools are proposed to make better use of existing runways. Procedures will be evaluated for crossing runway configurations at a number of benchmark airports. Terminal airspace redesigns, planned for most of the benchmark airports and metro areas, are aimed at improving the transition of arrivals and departures. Traffic management advisory tools, which help in managing the arrival stream, will become operational at four additional sites. Also, the multi-center capability will be evaluated in the Philadelphia area. Surface management systems are being explored for operational use later in the decade.

Arrival/Departure Rates Quadrant Timeline

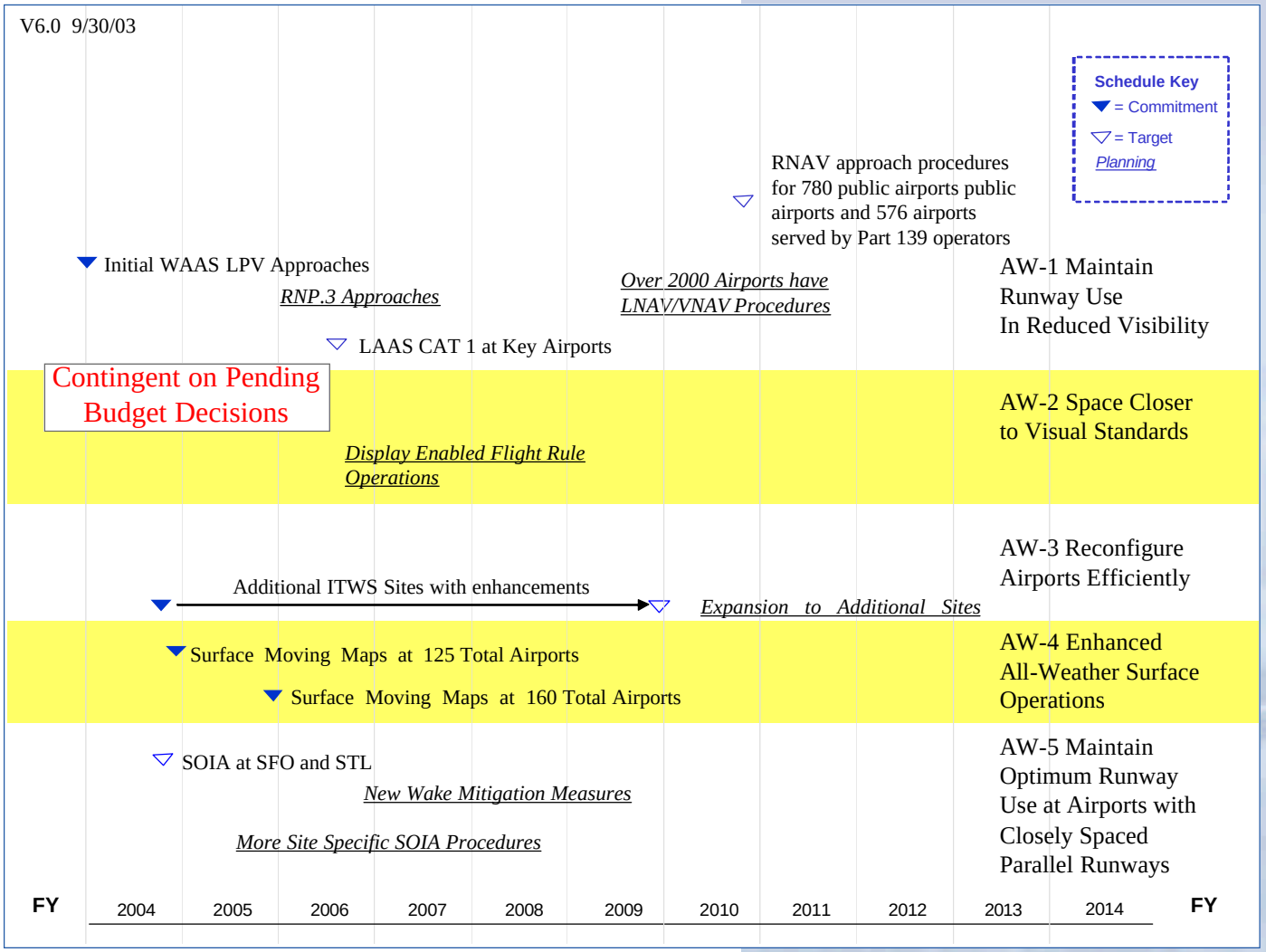


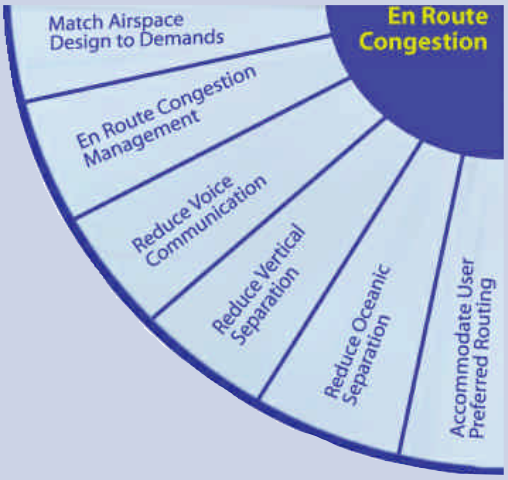
Airport Weather

For the benchmark airports, inclement weather operations lower arrival and departure rates an average 18 percent. As weather or visibility degrades, runway use may become limited and spacing between aircraft is increased. To make airport operations less sensitive to weather, more options for runway configurations and more consistent spacing of operations are necessary, both of which require new technologies. Improved forecast data will also help. With RNP and improved navigation means, precision approaches become available at more airports. A variety of procedures, including wake-mitigation and flight monitoring, allow operations to increase on closely-spaced parallel runways as bad weather arrives. Cockpit Display of Traffic Information may enable visual approaches to continue into marginal visual flight rules conditions. A moving map display will also help with improved surface situational awareness.



Airport Weather Conditions Quadrant Timeline

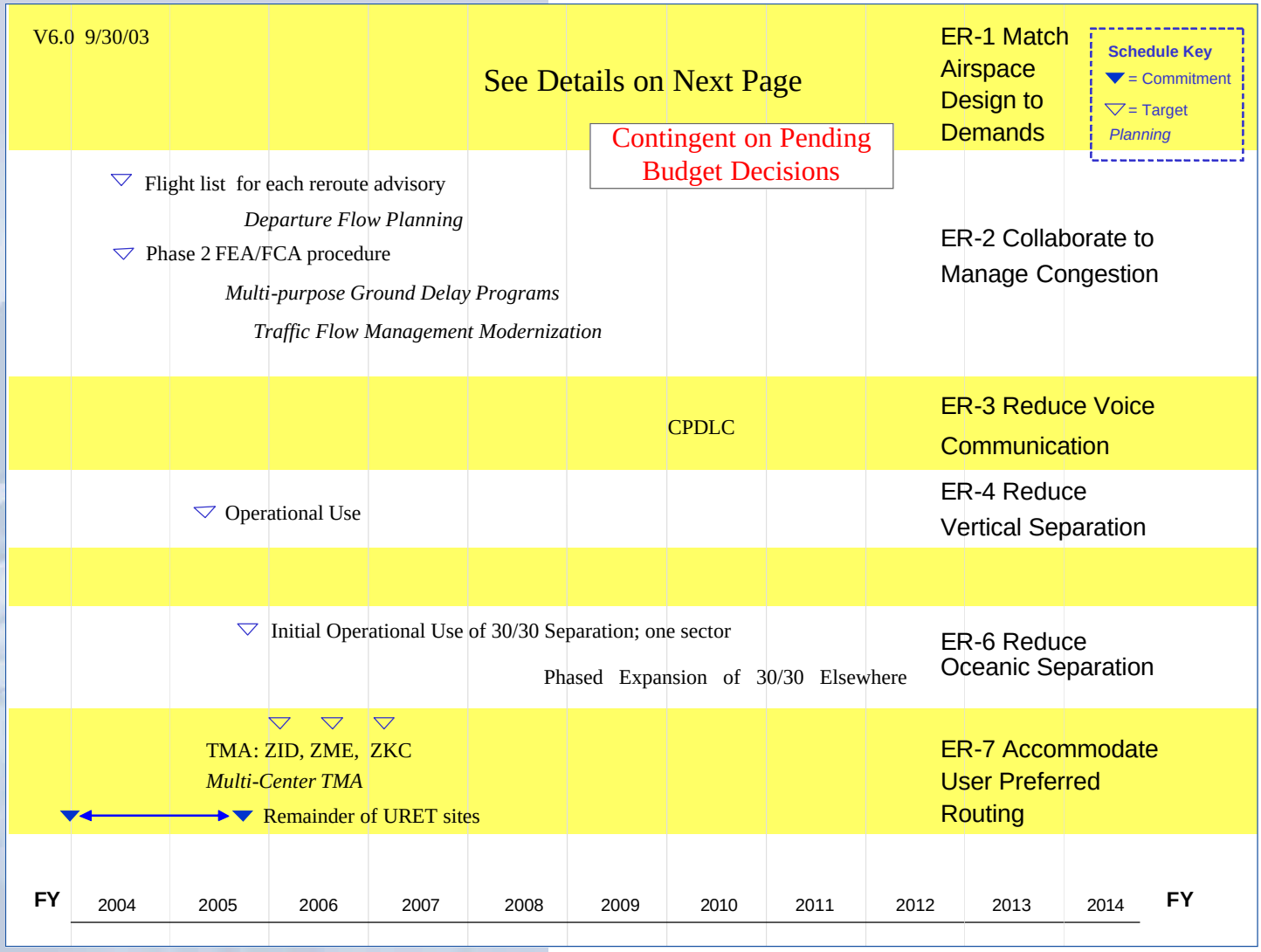




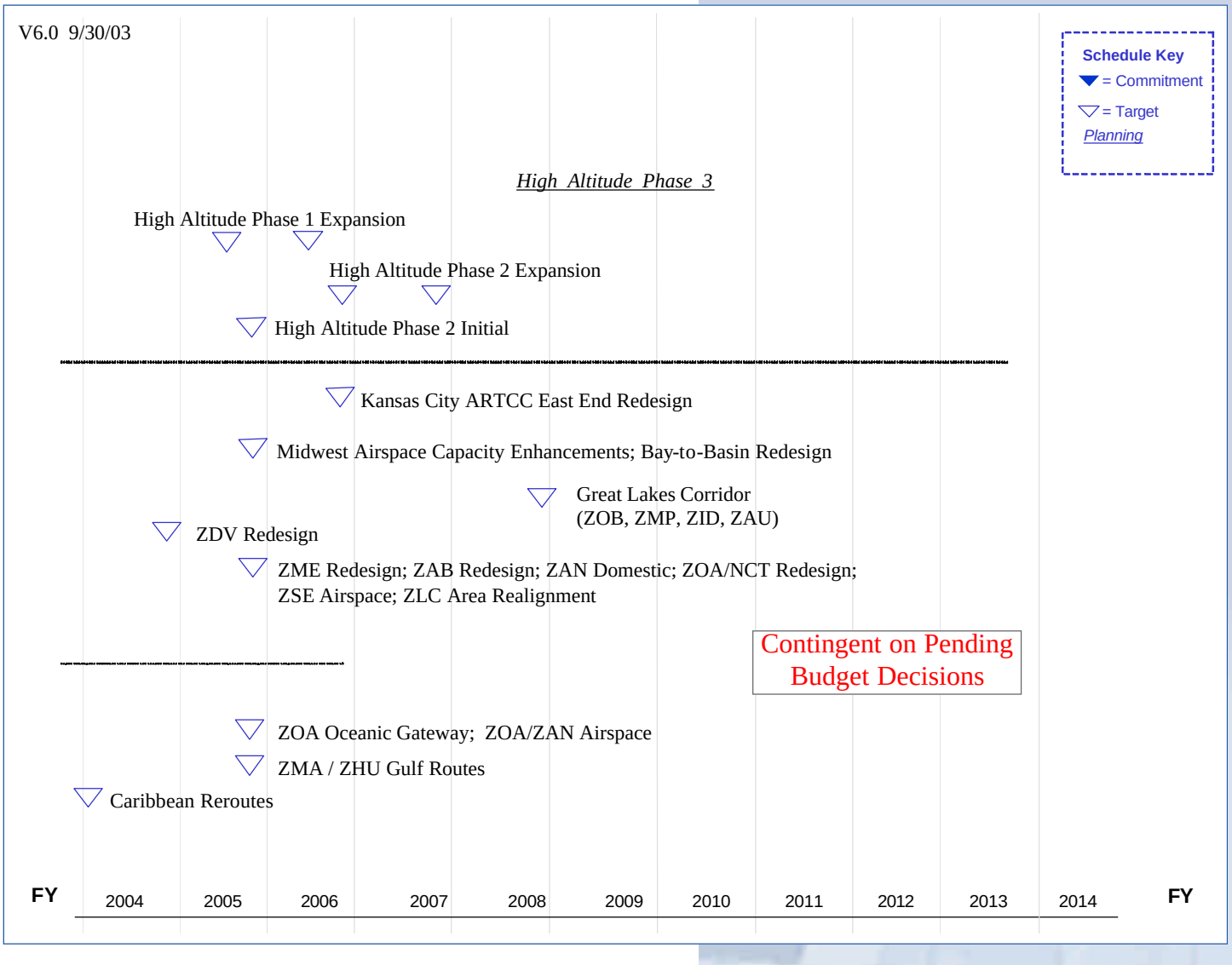
En Route Congestion

In the en route arena, capacity and efficiency are governed by airspace design, flow planning practices, separation standards, and controller workload. Airspace design changes are being made, both in the short and long term to fit sectors to the traffic demand, and to establish more effective airspace structures in the long run. The long-term plans include routes based on RNP of the aircraft. The transition to collaborative decision-making and "system thinking" will change flow planning practices to better match available capacity to the demand. Domestic Reduced Vertical Separation Minima (DRVSM) will reduce vertical separation standards between flight level 290 to flight level 410 within the NAS, including Alaska and the Gulf of Mexico; southern Canada and Mexico plan simultaneous or near simultaneous transitions with the United States to DRVSM. Horizontal separation standards of 30 miles are planned in the Oceanic airspace. Tools for accommodating and managing user plans and requests (URET and TMA), will assist controllers in managing the forecasted increase in demand.

En Route Congestion Quadrant Timeline



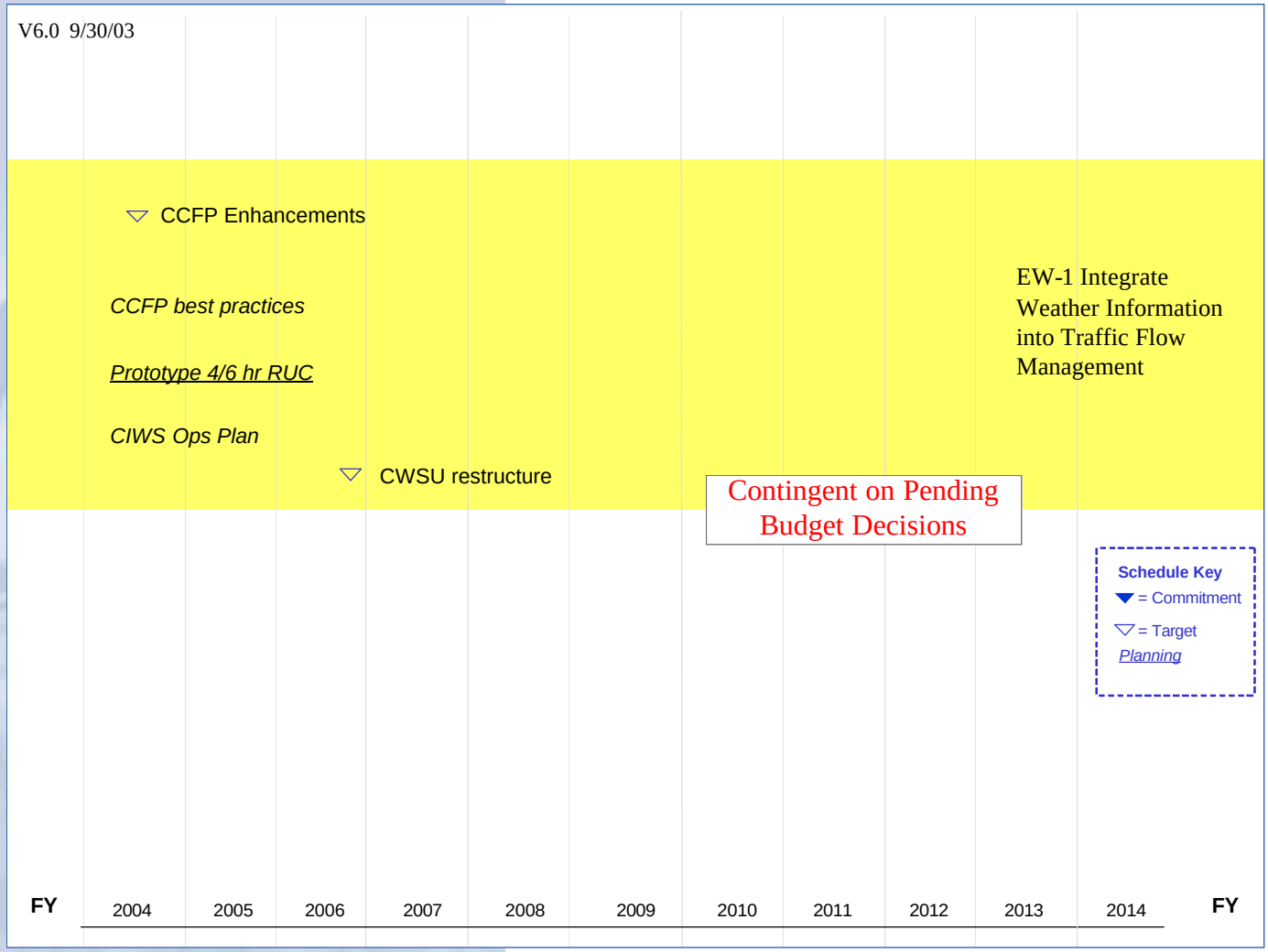
ER-1 Match Airspace Design to Demands Quadrant Timeline



En Route Severe Weather

In a typical year, 70 percent of delays are attributed to weather restrictions. Improving forecasts, sharing real-time data, and the application of weather information to traffic management planning, as well as integrating weather information into decision-support systems, will mitigate weather-related delays. The disruptions caused by hazardous en route weather are magnified by the uncertainty in the location, as well as the movement and severity of weather conditions. Forecast accuracy is not well suited to the strategic planning of traffic flow decisions. Joint planning is further hindered by limitations in real-time data sharing capabilities. Operational decision-making by airlines and traffic flow managers will be improved when common awareness of the situation and a methodology to mitigate the impact are coupled with several key developments, including improved data exchange, training for interpretation of forecasts, and improvements to the coordination processes.

En Route Severe Weather Quadrant Timeline



Progress on Challenges

Infrastructure and Safety

As a tactical implementation plan, the OEP assumes the ongoing modernization of NAS infrastructure systems that perform both ATC automation and the Communications/Navigation/Surveillance capabilities that support and enable the safe provision of air traffic services. Major modernization efforts within each of the flight domains are needed to support ATM enhancements and operations, as defined in the NAS Concept of Operations published by RTCA.

Within the next five years, the Standard Terminal Automation Replacement System and the En Route Automation Modernization will replace our current automation suite, which is currently constrained by inflexible design, obsolete hardware, and expensive analog connections. Similarly, we are modernizing our ATC air/ground voice infrastructure, with a technology refresh that should reduce the cost and time needed for maintenance and upgrades.

These distributed, adaptable systems, together with seamless satellite-based navigation equipment, communications equipment, and surveillance equipment, will provide accurate, real-time information shared by both service provider and operators. The NAS Architecture Target System Description presents the expected capabilities of this future NAS in 2015.

The OEP reflects commitments for implementation of capacity and efficiency enhancements as the NAS transitions to this modernized infrastructure. Although much of our infrastructure efforts are focused on runways and airport improvements, these need to be complemented with technology-based decision support tools, such as Free Flight's URET and TMA, which use the information available from existing infrastructure and aircraft equipage.

Current ETMS traffic flow management tools help us capture some available capacity lost to weather or congestion, but growth is limited by the aging capabilities of ETMS. Just as the spreadsheet revolutionized financial management, the Traffic Flow Management (TFM) modernization program will transform the information available to traffic flow managers and airline operations. The new TFM database will enable secure data exchange and provide a rich platform for advanced collaboration and CDM tools.

The successful commissioning of WAAS this year provides an unprecedented step, both in safety and in access for general aviation. Approaches with vertical guidance at several thousand runway ends are enabled and procedures work is progressing. WAAS also enables more use of RNAV for more flexible and efficient flight. Vertical guidance reduces the possibility of controlled flight into terrain (CFIT), while enabling aircraft to land efficiently in bad weather. Enhanced situational awareness using Cockpit Display of Traffic Information (CDTI) will improve safety on the airport surface and also enable more efficient

The FAA also has infrastructure and safety priorities. . .

. . .infrastructure is to be the enabler of future capacity increases

operations through the use of CDTI Enhanced Flight Rules. RNP will improve route safety. Capstone is improving the infrastructure in Alaska, and its proven capabilities are migrating to the lower 48 states. Other programs will also reduce runway incursions.

Security continues to be a high priority. The Transportation Safety Administration is now responsible for many aspects of physical security of which the flying public is most aware, such as improved passenger and baggage screening, cockpit door hardening, and the presence of Federal Air Marshals on selected flights. The FAA, however, retains responsibility for the security of the National Airspace System.

Integration of Lines of Business and Decision Making

The new ATO has two primary focus areas: service and value. As the FAA's provider for air traffic services, the ATO will function as a performance-based organization. Its efforts are measured against specific goals for the service units, which will have full authority and responsibility for providing their assigned goods or services. Internally, the ATO will use an effective cost-accounting system that will enable it to benchmark its costs. In addition, the ATO must design appropriate customer need metrics and establish realistic performance expectations.

Instead of dealing with separate organizations (Air Traffic Services, Research and Acquisition, or the Free Flight office) for different aspects of service, customers will find it easier and less confusing to access organizational points of accountability for services. By assimilating the resources of these previously segmented groups, ATO leadership will have an information infrastructure that enables them to use accurate and timely data in their decision-making processes. At the same time, the agency will be able to take full advantage of the personnel and acquisition reforms enacted by Congress to improve air traffic control management and ensure timely delivery of new technologies.

While the ATO's job is about service, it's also about value. If the exact same service can be produced at a lower cost, its value will increase. If a better service can be produced for the same cost, its value will improve. Cost is the common denominator in everything that the ATO will do.

It is important to understand that the FAA needs to set performance goals against value, not just against output. In other words, we have to effectively factor in what it costs for the agency to produce its customer services.

So what do we get with the ATO? Essentially, it is a new way of doing business at the FAA that we anticipate will pay real dividends to the industry and, ultimately, to the traveling public, because the idea is to make sure our services and capacity meet the demand, while at the same time exercising good stewardship of the taxpayers' dollar.

As the strong economic indicators and the traffic patterns are telling us, we don't have a moment to spare because demand is coming back and increased capacity is going to be needed. What is important is for the agency to be aligned to the services it produces, not the technical things that it provides.

With the ATO, the agency's separate delivery, modernization, and research activities will be consolidated. Almost more importantly, in the context of the fundamental nature of the agency as a government service, this consolidation is going to produce a more comprehensive operating plan in advance for each year, and for five years or longer, so we can understand the total cost of doing business and be able to predict the affordability of what we are doing. That's the way we're going to achieve predictability in meeting our goals.

As a performance-based organization, we have to set credible goals and expectations and also have the financial and operations planning to meet those goals. That will be apparent in our results.

ATO's acquisition and business services unit is responsible for setting policy and standards of acquisition, as well as standards of financial review. It also sets standards of return on investment. But the actual responsibility for acquiring any capital investment for the benefit of our customer will fall into the business unit that has to implement it.

Unlike recent practices, where research and acquisitions is a separate organization with a separate budget, a single line of business is now responsible for justifying and keeping acquisitions on track with certified acquisition officers in place. We will have a single point of accountability that monitors the process from the time the acquisition is planned to the time the system is ready to be fielded.

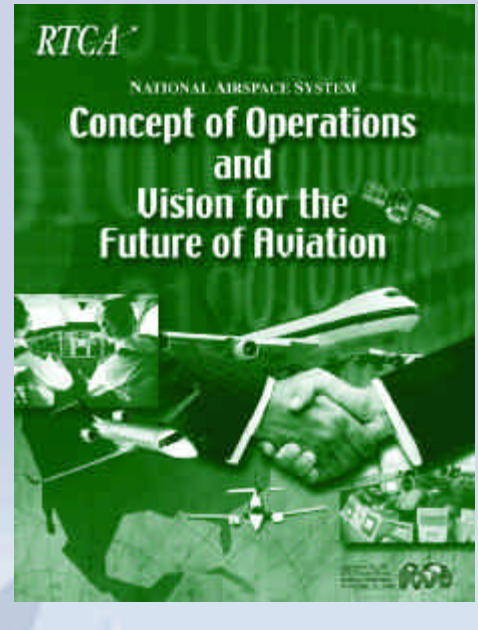
The agency will be able to measure its success by the credibility we have earned in managing our money, our services, and in meeting the needs of our owners, our employees, and our customers. When that happens, we believe we'll have the ability to truly understand the affordability of our future and how to modernize the National Airspace System in a responsible way.

Multi-Agency Focus on Research Projects

This year we established a Joint Planning and Development Office consisting of senior executives from the White House, Department of Commerce, Department of Transportation, Department of Defense, Department of Homeland Security, and the National Aeronautics and Space Administration which will develop a living document that will serve as a long-range (25 years) plan for government and industry. The bold national aerospace plan will be a comprehensive plan that provides for transformation and strategic direction to the industry to guarantee the research, development, coordination, regulation, and practices necessary to implement a transformation of the air transportation system that will have more capacity, be more efficient to operate, and be more affordable

for the flying public. The development of the plan will include representatives of air carriers, general aviation, pilots, manufacturers, air traffic controllers, airport authorities, labor, and other aviation industry experts.

This summer NASA and The MITRE Corporation hosted workshops to gather preliminary input from industry to address the barriers to a transformation of the new air transportation system and other potential problems in solving issues related to future demand. This input will help form the criteria by which future research can be evaluated. When research applicable to capacity or efficiency matures to a level that industry and government are collectively prepared to plan and schedule the investments to implement the operational change, it will be ready for the Operational Evolution Plan.



Coordination with Industry

The RTCA serves as facilitator and coordinator of an aviation community consensus-based OEP. While the internal functioning of the RTCA is being adjusted to better function with the FAA's new Air Traffic Organization, historically the RTCA Free Flight Steering Committee has tasked the Free Flight Select Committee to provide the detail of the aviation community's consensus, which then became the responsibility of a Select Committee sub-group called the RTCA OEP Working Group.

The FAA sent a letter to RTCA on May 1, 2003 requesting RTCA to resume the OEP Working Group activities, which had been suspended since late 2002. The request was "to assist us in improving and expanding on the capacity and efficiency improvements contained in the OEP." The working group's Terms of Reference contains five tasks. Two of the tasks have been completed. One task was a review of the "skunk works" products; the "skunk works" was an agency-wide brainstorming activity to identify new ideas that may have been overlooked by the agency. The other task involved a review and industry validation of the Operational Evolution Plan commitments. The group made additional comments and raised other significant issues that are included in the final RTCA report. All of the information contained in the final RTCA report is being considered in the context of the ATO and feedback will be provided to RTCA.

The OEP Working Group has begun work on two more tasks: establishing relative priorities through drill down of solution sets; and making recommendations on the methodology to be used to continue avionics equipage. The working group is awaiting further clarification with respect to a fifth task.

The Future

Air traffic demand is returning. In some places, peak traffic demand has exceeded historical levels. With a combination of FAA and industry action, our situation is better than before, with many capacity and efficiency improvements completed.

Although demand is returning, as a community, we still face tight financial conditions. In today's environment, having clear priorities and alignment of investments is essential to stay ahead of the increasing demands on providing service. While we go through this significant change of creating the ATO, our focus on delivering improved service will not change. To continue to provide the best service possible, we need industry to speak in a unified voice to assure that we continue with the important improvements in the OEP.

Acronyms

AGL	Great Lakes Region
ARTCC	Air Route Traffic Control Center
ATC	Air Traffic Control
ATL	Atlanta Hartsfield Airport
ATM	Air Traffic Management
ATO	Air Traffic Organization
BCT	Boston Consolidated TRACON
CAT I	Category One Landing
CAT II/III	Category Two/Three Landing
CCFP	Collaborative Convective Forecast Product
CDM	Collaborative Decision Making
CDTI	Cockpit Display of Traffic Information
CEDES	An arrival fix into San Francisco Airport
CFIT	Controlled Flight Into Terrain
CIWS	Corridor Integrated Weather System
CLT	Charlotte/Douglas International Airport
CPDLC	Controller Pilot Data Link Communications
CVG	Cincinnati Airport
CWSU	Center Weather Service Unit
DEN	Denver International Airport
DFW	Dallas/Ft. Worth International Airport
DOD	Department of Defense
DOT	Department of Transportation
DRVSM	Domestic Reduced Vertical Separation Minima
ETMS	Enhanced Traffic Management System
FAA	Federal Aviation Administration
FCA	Flow Constrained Area
FEA	Flow Evaluation Areas
GPS	Global Positioning System
GSO	Greensboro Airport
HCF	Honolulu Control Facility
HNL	Honolulu Airport
IMC	Instrument Meteorological Conditions
ITWS	Integrated Terminal Weather System
JPDO	Joint Planning and Development Office
LAAS	Local Area Augmentation System
LAS	Las Vegas McCarran International Airport
LAX	Los Angeles International Airport
LGA	LaGuardia Airport
LNAV	Lateral Navigation
LPV	Lateral and Vertical Approach
MCO	Orlando Airport
MIA	Miami International Airport
MMC	Marginal Meteorological Conditions
NAS	National Airspace System
NASA	National Aeronautics and Space Administration
NCT	Northern California Tracon
NYICC	New York Integrated Control Complex
NY/NJ/PHL	New York/New Jersey/Philadelphia
OEP	Operational Evolution Plan
OPSNET	Operations Network
ORD	Chicago O'Hare International Airport
PCT	Potomac Consolidated TRACON
PDX	Portland Airport
PHX	Phoenix International Airport
RNAV	Area Navigation
RNP	Required Navigation Performance
RUC	Rapid Update Cycle
SAN	San Diego International Airport
SEA	Seattle-Tacoma International Airport
SFO	San Francisco International Airport
SIAP	Standard Instrument Approach Procedures
SOIA	Simultaneous Offset Instrument Approaches
STL	St. Louis International Airport
SUA	Special Use Airspace
TFM	Traffic Flow Management
TMA	Traffic Management Advisor
TRACON	Terminal Radar Approach Control Facility
URET	User Request Evaluation Tool
VMC	Visual Meteorological Conditions
VNAV	Vertical Navigation
WAAS	Wide Area Augmentation System
ZAB	Albuquerque ARTCC
ZAN	Anchorage ARTCC
ZAU	Chicago ARTCC
ZBW	Boston ARTCC
ZDC	Washington ARTCC
ZDV	Denver ARTCC
ZHU	Houston ARTCC
ZID	Indianapolis ARTCC
ZKC	Kansas City ARTCC
ZLA	Los Angeles ARTCC
ZLC	Salt Lake City ARTCC
ZMA	Miami ARTCC
ZME	Memphis ARTCC
ZMP	Minneapolis ARTCC
ZNY	New York ARTCC
ZOA	Oakland ARTCC
ZOB	Cleveland ARTCC
ZSE	Seattle ARTCC